**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS**

NUANCE COMMUNICATIONS, INC.,

        Plaintiff and Counterclaim
        Defendant,

   v.

OMILIA NATURAL LANGUAGE
SOLUTIONS, LTD.,

        Defendant and Counterclaim
        Plaintiff.

Case No. 1:19-CV-11438-PBS

**OMILIA NATURAL LANGUAGE SOLUTIONS, LTD.'S MEMORANDUM IN
SUPPORT OF ITS MOTION FOR SUMMARY JUDGEMENT OF INVALIDITY
UNDER 35 U.S.C. § 101 OF U.S. PATENT 8,532,993**

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I.   INTRODUCTION

Omilia Natural Language Solutions, Ltd. ("Omilia") moves for summary judgment that the claims of U.S. Patent No. 8,532,993 ("the '993 patent") are invalid as patent-ineligible subject matter under 35 U.S.C. § 101. The claims of the '993 patent fail the Supreme Court's two-step test for patent-eligibility because they are directed to a patent-ineligible abstract idea and contain no "inventive concept" to render them patent-eligible. *See Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208 (2014).

The '993 patent is directed to nothing more than the abstract idea of creating and using a language model with pronunciation probabilities by moving the pronunciation probabilities in the dictionary of a speech recognizer and incorporating them into the language model. A "language model" is itself an abstract idea and mental process for predicting the words likely spoken in an utterance based on the sounds and other words recognized. Pronunciation probabilities, which are also abstract, were conventionally used within the dictionaries of speech recognizers. The claims recite nothing more than the idea of using probabilities of pronunciations within the language model instead of the dictionary in guessing the likely words recognized. The claims merely recite a conventional processor, generic components of computer systems and storage devices to implement this abstract idea. They do not add any inventive concept. Such claims, which recite an abstract mental process and apply it on a conventional computer, are patent-ineligible.

The original claims as filed were rejected under § 101 by the USPTO as directed to mental steps that could be performed by a human being without use of a machine. To overcome the rejection, the applicant simply amended the claims to recite "via a processor" (claim 1), "a computer-readable storage medium having instructions stored" (claim 9) and "computer-readable storage device having instructions stored" (claim 17). The claims issued on September 10, 2013.

Subsequently, the Supreme Court on June, 14, 2014, clarified that such claims are patent-ineligible in its seminal opinion. *Alice*, 573 U.S. 208. The Supreme Court's *Alice* decision made clear that patents that simply recite an abstract idea and include a limitation to "apply it with a computer" are facially invalid under 35 U.S.C. § 101. *Alice*, 573 U.S. at 223. The '993 patent takes exactly this impermissible approach.

II.   FACTUAL BACKGROUND

A. The '993 Patent Discloses and Claims Nothing More than a Mental Process

In December 2016, Nuance purchased hundreds of patents from AT&T, including the '993 patent. *See* Declaration of Daniel S. Sternberg ("Sternberg Decl."), Ex. A, at NUANCE00000000417, NUANCE00000000483; Statement of Undisputed Material Facts (hereinafter "SUMF") ¶ 1.

The '993 patent concerns speech recognition systems and methods that use pronunciation-dependent language models to recognize speech. *See* '993 patent (Dkt. No. 1-03), at 1:20–25. All of the claims recite the steps of: (i) approximating transcribed speech to create a language model, (ii) incorporating pronunciations probabilities into the language model (including unique labels for most frequent words), and then (iii) recognizing an utterance (the speech) using the new language model. *Id.*, claims 1, 9, and 17. The claims further recite using basic computer elements such as a processor and storage, for implementing the same steps. *Id.*

A language model is a mathematical structure made up of words and likely word orders (lexical units) used in connection with an associated pronunciation dictionary (a list of sounds or phones that make up words). *See id.* at 1:45–52, 2:20–25, 3:26–51. It is used in speech recognition to identify the most probable words and word order in the speech utterance being analyzed. *Id.* The language model of the '993 patent is modified by including "pronunciation probabilities associated with unique word identifiers for words given their pronunciations." *Id.*

at abstract, 2:23–24, 6:2–4, Fig. 8. The '993 patent claims the idea of moving the pronunciation probabilities from the pronunciation dictionary into the language model. *Id.* at 3:30-33.

The '993 patent provides little explanation as to how to create the language model used by the speech recognizer. *See, e.g.*, *id.* at 5:5–16; 6:16–28. The speech recognition system is implemented in a "processing system," such as one made of conventional computer components, including a "conventional processor or microprocessor," "memory," "a conventional ROM device or another type of static storage device," or "any type of media," and "one or more conventional mechanisms that permit a user to input information to [the] system." *Id.* at 4:20–5:4; SUMF ¶¶ 3–5. The specification explains that "other embodiments of the invention may be practiced in network computing environments with many types of computer system configurations, including personal computers, hand-held devices, multi-processor systems, microprocessor-based or programmable consumer electronics, network PCs, mini computers, mainframe computers, and the like." '993 patent, at 11:56–62. The specification provides no further detail as to the implementation of the speech recognizer on a processor.

B. The USPTO Rejected the Claims under 35 U.S.C. §101

The application for the '993 patent was filed on July 2, 2012 as a continuation of a patent application initially filed on April 27, 2006. SUMF ¶ 2. The July 2, 2012 patent application contained three independent claims—one method claim (claim 1), one system claim (claim 9), and one device claim (claim 17). Sternberg Decl. Ex. C at NUANCE0000000038–NUANCE0000000042; SUMF ¶ 8. Original claims 1, 9, and 17 mirror each other except for the preamble. Sternberg Decl. Ex. C at NUANCE0000000038– NUANCE0000000042; SUMF ¶ 9. (reciting the claim language; highlighting added to demonstrate differences between the claims).

In the first November 5, 2012 office action, the Examiner rejected claims 1-8 and 17-20 as directed to non-statutory subject matter under 35 U.S.C. § 101 under the pre-*Alice* standard.

Sternberg Decl. Ex. D at NUANCE0000000055– NUANCE0000000056; SUMF ¶ 10. The

Examiner explained that claim 1 was not directed to statutory subject matter and did not perform

any transformation of material, and that "[t]he steps of approximating transcribed speech;

incorporating, into a language model, pronunciation probabilities; and recognizing an utterance,

could be performed by a human using a phonemic transcription dictionary to yield a language

model and incorporate pronunciation probabilities based on a probability log to recognize an

utterance." *Id.* The Examiner also found that dependent claims 2–8 were similarly ineligible

because "none of their corresponding steps explicitly or inherently require the use of a particular

machine." Sternberg Decl. Ex. D. at NUANCE0000000056. Claims 17-20 were rejected

because the there was no description of a computer-readable storage medium in the specification

and it would therefore include non-statutory subject matter. *Id.* at NUANCE0000000057.

To overcome the Examiner's rejections, in the February 5, 2013 Amendment, the

applicant amended independent claim 1 simply to recite "**via a processor**". Sternberg Decl. Ex.

E at NUANCE0000000067; SUMF ¶ 11. The applicant also amended claims 9 and 17 and their

dependent claims so that the "computer-readable storage medium" was one "**having**

instructions stored," which when executed by the processor caused it to perform the operations

recited in the claims. Sternberg Decl. Ex. E at NUANCE0000000068, NUANCE0000000070;

SUMF ¶ 12. In the accompanying Remarks to the Amendment, the applicant stated that the

recitation of a "processor" in amended claim 1 put the claims in compliance with 35 U.S.C.

§ 101 and did not present any argument as to why the claimed method would otherwise be

patentable. Sternberg Decl. Ex. E at NUANCE0000000072; SUMF ¶ 13. The Examiner then

allowed the claims. *See* Sternberg Decl. Ex. F at NUANCE0000000088; SUMF ¶ 14. The

claims issued on September 10, 2013. '993 patent, at [45].

III.   LEGAL STANDARD

Summary judgment should be granted where there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c); *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1578 (Fed. Cir. 1996). "Patent eligibility under § 101 is a question of law that may contain underlying issues of fact." *Solutran, Inc. v. Elavon, Inc.*, 931 F.3d 1161, 1165 (Fed. Cir. 2019). When analyzing a claim for patent-eligibility, the claim language and specification control. *See Chamberlain Grp. v. Techtronic Indus. Co.*, 935 F.3d 1341, 1346 (Fed. Cir. 2019); *see also Aatrix Software., Inc. v. Green Shades Software, Inc.*, 890 F.3d 1354, 1356 (Fed. Cir. 2018) (Moore, J., concurring from denial of petition for rehearing en banc) ("In a situation where the specification admits the additional claim elements are well-understood, routine, and conventional, it will be difficult, if not impossible, for a patentee to show a genuine dispute.").

Patent eligibility under 35 U.S.C. § 101 has "an important implicit exception": "laws of nature, natural phenomena, and abstract ideas are not patentable." *Alice*, 573 U.S. at 216 (quoting *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)). Mathematical formulas are likewise categorically patent-ineligible. *See Bilski v. Kappos*, 561 U.S. 593, 611 (2010). The Supreme Court has devised a two-stage framework to determine whether a claim falls outside the scope of § 101. *Alice*, 573 U.S. at 217; *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 77–78 (2012). This framework asks (1) whether the claim at issue is "directed to" a patent-ineligible concept, such as "laws of nature, natural phenomena, and abstract ideas," and if so, (2) whether the claim elements "both individually and as an ordered combination to determine whether the additional elements transform the nature of the claim into a patent-eligible application." *Alice*, 573 U.S. at 217 (internal quotation marks and citation omitted). Determining whether the claims are directed to a patent-ineligible concept

may be made solely by examination of the claims and specification without the need for additional discovery or extrinsic evidence. *See Chamberlain Grp.*, 935 F.3d at 1346–47.

If a claim is directed to an abstract idea, the court then turns to step two to determine whether the claims add "significantly more" than the abstract idea itself. *Alice*, 573 U.S. at 217–18. The court must determine whether the claimed elements recite an "inventive concept." *Id.*; *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1166-67 (Fed. Cir. 2018). This inquiry focuses on the patent claims. *See Synopsis, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1152 (Fed. Cir. 2016). "Simply appending conventional steps, specified at a high level of generality, is not enough to supply an inventive concept." *Alice*, 573 U.S. at 222 (internal quotation marks and citation omitted). "Stating an abstract idea while adding the words 'apply it with a computer,'" or "limiting the use of an abstract idea 'to a particular technological environment'" does not render a claim any less abstract. *Id.* at 223–24; *Affinity Labs of Tx. v. DirecTV, LLC*, 838 F.3d 1253, 1259 (Fed. Cir. 2016).

IV.   ARGUMENT

The claims of the '993 patent recite nothing more than the execution on a generic computer of the abstract idea of creating and using a language model with pronunciation probabilities. The specification expressly admits that the claimed method requires nothing more than use of a conventional computer system. SUMF ¶¶ 3–5. The claims are ineligible under *Alice*.

A. Claim 1 Is Invalid for Failure to Claim Patent-Eligible Subject Matter

1. *Claim 1 is directed to the abstract idea of creating and using a language model with pronunciation probabilities*

Since all the independent claims recite the same steps and differ only in their preamble, an analysis of claim 1 is exemplary for the patent eligibility issues of all claims. Claim 1 is

directed to the abstract idea of creating and using a language model that includes pronunciation probabilities. A language model is itself an abstract idea. As disclosed in the specification, a language model is similar to a mathematical look-up table—i.e. a mathematical structure made up of words and likely word orders (lexical units) used in connection with an associated pronunciation dictionary (a list of sounds or phones that make up words) to guess the likely recognized words and sentences. *See* '993 patent at 1:45–52, 2:20–25, 3:26–51. This is simply the mental process for determining the most likely word based on typical sounds in words, as well as the sequence of those words. This basic concept is used in speech recognition, whether automated or not. The '993 patent merely adds the abstract concept of taking pronunciation probabilities from the dictionary and incorporating them into the language model of the speech recognizer. *Id.* at 3:30–33; claims 1, 9, 17.

Claim 1 recites three steps: (1) approximating transcribed speech to create a language model; (2) incorporating pronunciation probabilities into the language model including unique labels for different word pronunciations and a special label for the most frequent word; and (3) using the new language model to recognize an utterance:

1. A method comprising:

> ***approximating transcribed speech***, via a processor, using a phonemic transcription dataset associated with a speaker, ***to yield a language model***, where the phonemic transcription dataset is based on a pronunciation model of the speaker,
>
> ***incorporating, into the language model***, pronunciation probabilities associated with respective unique labels for each different pronunciation of a word, wherein the respective unique label for a most frequent word indicates a special status in the language model; and
>
> after incorporating the pronunciation probabilities into the language model, ***recognizing an utterance using the language model***.

Id. at 12:13–26 (emphasis added).

The patent describes its contribution as moving mathematical probabilities from one abstract mathematical structure of the speech recognizer —a "pronunciation lexicon" or dictionary—into another abstract mathematical structure—a language model. *Id* at 3:30–33. Accordingly, Claim 1 merely recites the mental process of creating and using probabilities in a language model, which is no different than the mental process of guessing words using a pronunciation dictionary. The claim is directed to this broad abstract idea and preempts all uses of this process. The claim does not recite how to generate and use the language model, or limit the language model to a particular technical environment. *See Id*., claim 1.

Each step of claim 1 is capable of being performed by a human being without a processor, which is further evidence that claim 1 is directed to an abstract mental process. *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016). A person can build a language model or map the likely words in an utterance using a dictionary of sounds and words with their corresponding pronunciations; can determine probabilities for variant pronunciations of words and assign specific identifiers for each; and can use this information (both the map and probabilities, including unique labels for most frequent words) to recognize an utterance. Moving the existing pronunciation probabilities from the dictionary to the language model is a patent-ineligible abstract idea.

      a.   <u>The prosecution history and specification confirm claim 1 is directed to an abstract idea</u>

During prosecution, the USPTO concluded that the claims were directed to this abstract idea. Applying the pre-*Alice* standard, the Examiner initially rejected the claim 1 because it was not tied to a statutory category, and did not transform underlying subject matter, explaining that the steps of the method could be performed by a person. Sternberg Decl. Ex. D at NUANCE0000000055–NUANCE0000000056; SUMF ¶ 10. The Examiner stated that the

method "could be performed by a human using a phonemic transcription dictionary to yield a language model and incorporate pronunciation probabilities based on a probability log to recognize an utterance." Sternberg Decl. Ex. D at NUANCE0000000056; SUMF ¶ 13. The applicant did not dispute the abstract nature of the claim. *See* Sternberg Decl. Ex. E at NUANCE0000000067; SUMF ¶¶ 11–13. Instead, it amended the claim to recite a "via a processor." Sternberg Decl. Ex. E at NUANCE0000000067; SUMF ¶ 11.

The addition of a "processor" does not transform the abstract idea into patentable subject matter. *See* Sternberg Decl. Ex. E at NUANCE0000000067; SUMF ¶ 11. The Supreme Court explicitly rejected the idea that an abstract idea could be claimed by simply saying "apply it with a computer." *Alice Corp.*, 573 U.S. at 223. The specification makes clear that the claimed creation of a language model requires no specialized hardware, and may be performed with "many types of computer system configurations, including personal computers, hand-held devices, multi-processor systems, microprocessor-based or programmable consumer electronics, network PCs, mini computers, mainframe computers, and the like." '993 patent at 11:56–62; SUMF ¶ 5. Similarly, the specification discloses that the system's memory for implementing the claims "may be a random access memory (RAM) or another type of dynamic storage device that stores information and instructions for execution by processor." '993 patent, at 4:35-37; SUMF ¶¶ 4–5. Claim 1 does not require any specialized hardware to perform the claimed method. '993 patent, at 4:33–35; SUMF ¶¶ 3–5. Claim 1 is thus directed to a method of "analyzing information by steps people go through in their minds, or by mathematical algorithms," which is a "mental process[] within the abstract-idea category." *See Elec. Power Grp, LLC*, 830 F.3d at 1354.

The use of a generic computer, without more, cannot rescue the claim. The Federal Circuit has repeatedly found that a "mere automation of manual processes using generic computers does not constitute a patentable improvement in computer technologies." *See Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1055 (Fed. Cir. 2017). Claim 1 recites nothing else beyond the abstract idea performed by a processor. Even the alleged benefit of the patent, i.e. reduced error rate in speech recognition, reflects the abstract nature of claim 1. '993 patent at 3:30–48. This potential error rate reduction is the mathematical consequence of using pronunciations probabilities within a language model. It is not some computer-centric improvement; it is the combination of two abstract mathematical concepts: a language model for mapping likely words and pronunciation probabilities to help guess those words. Claim 1 is abstract as it does not involve a further innovation to a computer system and contemplates merely using a computer "as a tool." *See Credit Acceptance Corp.*, 859 F.3d at 1055.

b.   Courts Have Found Similar Claims Abstract and Invalid

The risk of invalidity under §101 of pre-*Alice* claims is well-known. In another case before this Court, Nuance has acknowledged this and asserted that patentees have an affirmative duty to reevaluate the patent-eligibility of claims that issued before the Supreme Court's *Alice* decision or potentially be subject to attorney fees. Sternberg Decl. Ex. G, Ans. and Counterclaims, *Synkloud Techs., LLC v. Nuance Comm'cns, Inc.*, No. 1:20-cv-10564-PBS, ¶¶ 70–72 (D. Mass. Jun. 19, 2020), ECF No. 11; *see also Inventor Holdings, LLC v. Bed Bath & Beyond, Inc.*, 876 F.3d 1372, 1379 (Fed. Cir. 2017) (finding "no uncertainty or difficulty" determining earlier-prosecuted claims were patent-ineligible in light of *Alice*).

As the Federal Circuit explained in *Electric Power Group*, and has held in multiple cases, "analyzing information by steps people go through in their minds, or by mathematical algorithms, without more [are] essentially mental processes within the abstract-idea concept."

Elec. Power Grp., LLC, 830 F.3d at 1353–54. In *Electric Power Group*, the Federal Circuit

found that the challenged claims, which used a computer to collect, analyze, and display results

of the collection and analysis, were directed to an abstract idea because "[t]he advance they

purport to make is a process of gathering and analyzing information of a specified content, then

displaying the results, and not any particular assertedly inventive technology for performing

those functions." 840 F.3d at 1354. This conclusion is consistent with numerous prior decisions

of that court regarding similar claims. *See id.*; *see, e.g.*, *In re TLI Comm'cns, LLC Patent Litig*,

823 F.3d 607, 613 (Fed. Cir. 2016) (patent for taking, transmitting, and organizing digital images

was "directed to the abstract idea of classifying and storing digital images in an organized

manner"); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.* 758 F.3d 1344, 1350 (Fed. Cir.

2014) (patent for a digital image processing system "claims an abstract idea because it describes

a process of organizing information through mathematical correlations and is not tied to a

specific structure or machine").

Decisions by the Federal Circuit subsequent to *Electric Power Group* further affirm that

the claims here are directed to an abstract idea. *SAP*, 898 F.3d 1161; *Univ. of Fla. Research

Found., Inc. v. GE Co.*, 916 F.3d 1363 (Fed. Cir. 2019). In *SAP*, the Federal Circuit held that

claims directed to creating and using statistical analyses to make investment decisions were

directed to an abstract idea: "The focus of the claims. . . is on selecting certain information,

analyzing it using mathematical techniques, and reporting or displaying the results of the

analysis. That is all abstract." *SAP*, 898 F.3d at 1164–65, 1167. The Court explained that the

technological field (investing) did not diminish the abstract character of the claims and found

that the claims were not directed to a computer specific improvement but rather "improved

mathematical analysis." *Id.* at 1168. In *Univ. of Fla.*, the Federal Circuit again held that

automating a method for collecting, analyzing and displaying information, this time medical

recommendations, was abstract. *See Univ. of Fla.*, 916 F.3d at 1367. The Court found that the

claims simply concerned the automation of a "'pen and paper methodology' to conserve human

resources and minimize errors." *Id.* The same is true of the '993 claims at issue here.

The Federal Circuit has thus consistently found that collecting and processing

information using the same process that humans use, without more, is an abstract idea and not

patent eligible. Claim 1 of the '993 patent is no different. The '993 patent describes how

humans can recognize speech using probabilities and simply proposes using a conventional

processor to perform the claimed speech recognition tasks. *See* '993 patent, at 4:20–45; SUMF

¶¶ 3–5. Courts have consistently found that such "quintessential 'do it on a computer'" claims

"are directed to abstract ideas." *Univ. of Fla.*, 916 F. 3d at 1367.

The claims here are fundamentally different from computer-centric claims found not to

be directed to patent-ineligible subject matter. *Cf. DDR Holdings, LLC v. Hotels.com, L.P.*, 773

F.3d 1245, 1257 (Fed. Cir. 2014) (finding claims to be "necessarily rooted in computer

technology in order to overcome a problem specifically arising in the realm of computer

networks"); *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1339 (Fed. Cir. 2016) (finding

claims "directed to a specific implementation of a solution to a problem in the software arts");

McRO, Inc. v. Bandai Namco Games Am. Inc., 837 F.3d 1299, 1314–16 (Fed. Cir. 2016) (finding

the claims limited to a specific form of computer animation that humans did not use). In each of

these cases, the Federal Circuit found that the claims were directed to computer specific

solutions and therefore were not directed to an abstract idea. *Id.* For example, in *McRO*, the

claims were directed to using a computer to perform computer animation based on a series of

rules, as compared to prior art methods where human animators relied on their individual

subjective input. *See McRO*, 837 F.3d at 1314–15. The claimed method in *McRo* required that certain "rules be rendered in a specific way," and the claimed automation went beyond organizing information in a new form. *Id*. at 1315. Critical to the Federal Circuit's analysis was the fact that in the claimed computerized process, rules were used in a specific way involving the generation and evaluation of specific parameters. *Id.*

In contrast to those computer-centric claims, claim 1 presents "a situation where general-purpose computer components are added post-hoc to a fundamental economic practice or mathematical equation." *See Enfish*, 882 F.3d at 1339. Claim 1 here is even broad enough to cover any speech recognition system that incorporates pronunciation probabilities into the language model, even if done solely by a human with pen and paper. *See* '993 patent, at 12:13–26. As the Federal Circuit distinguished the claims at issue in *SAP* and *Univ. of Fla* from *Enfish, McRO* and similar cases, the claims here lack the specificity needed to describe a computer-specific improvement and are instead directed to an abstract idea. *See SAP*, 898 F.3d at 1167-1168; *Univ. of Fla.*, 916 F. 3d at 1367-1368; *see also ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 769 (Fed. Cir. 2019) (results-oriented claims that "encompass[] the principle in the abstract no matter how implemented" are abstract (internal quotation and citations omitted)).

Given the abstract nature of Claim 1 of the '993 patent, the preemption concern that "undergirds" the § 101 jurisprudence are particularly pronounced. *See Alice*, 573 U.S. at 223. Claim 1 covers ***any*** language model, and ***any*** method of incorporating "pronunciation probabilities associated with respective unique labels for each different pronunciation of a word. . . ." *See* '993 patent, at 12:13–26. The process of claim 1 thus covers all automated language recognizers that incorporate the use of labels in such pronunciation probabilities. In essence,

claim 1 here is broad enough to cover any speech recognition system that incorporates pronunciation probabilities into the language model. *Id.*

      2. *Claim 1 lacks an inventive concept and instead recites only well-understood, conventional, and routine components and combination*

Claim 1 fails to provide an inventive concept under step two of *Alice*. Claim 1 recites three steps: (1) ***creating*** a language model by ***approximating*** transcribed speech; (2) ***incorporating*** pronunciation probabilities associated with unique labels into the language model; and (3) ***recognizing*** an utterance using the previously-constructed and refined language model. *See id.* None of these limitations, either individually, or as an ordered combination, provides an inventive concept sufficient to turn the abstract idea into a patent-ineligible invention. The claims here recite nothing more than the abstract idea, creating and using a language model with pronunciation probabilities, by way of a generic processor. Reciting an abstract idea and adding the word "apply it with a computer" is not sufficient under step two of *Alice* as a matter of law. *Alice*, 573 U.S. at 223.

When claims are directed to an abstract idea, as is the case here, for those claims to be patent-eligible they must recite an "inventive concept" that is "significantly more than a patent upon the [ineligible concept] itself." *Alice*, 573 U.S. at 218. In essence, "after identifying an ineligible concept at step one, we ask at step two '[w]hat else is there in the claims before us?'" *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290 (Fed. Cir. 2018) (quoting *Mayo*, 566 U.S. at 78). Here, claim 1 provides no inventive concept beyond the abstract idea. Claim 1 recites only the abstract idea of creating and using a language model with pronunciation probabilities. Moving the pronunciation probabilities from a dictionary to a language model as recited in the claims, is itself an abstract idea. It exclusively concerns the mental concept of using the pronunciation probabilities, which are themselves an abstract mathematical

relationship. The alleged improvement provided by the patent, the reduced error rate in speech recognition, is merely the mathematical consequence of using pronunciation probabilities, again demonstrating the exclusive abstract nature of claim 1. *See* '993 patent at 3:30–48. This abstract idea cannot provide the inventive concept. The inventive concept must be something "significantly more than" the abstract idea. *Alice*, 573 U.S. at 218. The claims provides no other non-abstract elements.

The remainder of the claim simply applies the same abstract idea on a generic computer or processor to collect, store, and analyze data. These limitations do not provide an inventive concept sufficient for eligibility. *Content Extraction & Transmission LLC v. Wells Fargo Bank, N.A.*, 776 F.3d 1343, 1347 (Fed. Cir. 2014) ("The concept of data collection, recognition, and storage is undisputedly well-known.").

The prosecution history makes clear that claim 1 fails to provide an inventive concept. During the prosecution, the applicant in amending the claims to recite "via a processor" and offering no argument in rebuttal, conceded that moving pronunciation probabilities to a language model from a dictionary was abstract. SUMF ¶ 13; *See Advance Transformer Co. v. Levinson,* 837 F.2d 1081, 1083 (Fed. Cir. 1988) (In the context of noninfringement, "[p]ositions taken in order to obtain allowance of an applicant's claims are pertinent to an understanding and interpretation of the claims that are granted by the PTO . . . and may work an estoppel as against a subsequent different or broader interpretation.") (citations omitted); *UCB, Inc. v. Yeda Research & Dev. Co.*, 837 F.3d 1256, 1261 (Fed. Cir. 2016). The USPTO rejected the original claim to this concept under § 101 because it could be performed by a human alone. In other words, they were directed to a mental concept, an abstract idea. Sternberg Decl. Ex. D at NUANCE0000000055–NUANCE0000000056; SUMF ¶ 10. In response, the applicant did not

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dispute this or identify any patentable merits in the original claims. SUMF ¶¶ 11–13. Instead,

the applicant amended its claims to recite the now insufficient generic computer element "via a

processor" to overcome the §101 rejection. *See* Sternberg Decl. Ex. E at NUANCE0000000067;

SUMF ¶ 11. This addition was the sole reason for the Examiner's subsequent allowance. *See*

Sternberg Decl. Ex. F at NUANCE0000000088; SUMF ¶ 14. The applicant therefore conceded

that there were no non-abstract elements in the original claim. The original claim shares all the

same limitations to the current claim 1, except for the added "processor." SUMF ¶¶ 11, 13. The

addition of that generic processor is not sufficient under the Supreme Court's guidance in *Alice*.

Intellectual Ventures I LLC v. Capital One Fin. Corp., 850 F.3d 1332, 1341 (Fed. Cir. 2017). "If

a claim's only 'inventive concept' is the application of an abstract idea using conventional and

well-understood techniques, the claim has not been transformed into a patent-eligible application

of an abstract idea." *BSG Tech LLC v. Buyseasons, Inc.*, 899 F.3d 1281, 1290–91 (Fed. Cir.

2018); *ChargePoint*, 920 F.3d at 769.

It is undisputed that each and every step of the method of claim 1 and included in each of

the independent claims 9 and 17, involves the organization of existing data and is performed by a

generic computer and memory, which are conventional and well-understood as described by the

specification. '993 patent, at 4:33–45; SUMF ¶¶ 3–5, 9. The '993 patent does not require any

specialized hardware and software to execute the steps of the claimed methods. *See* '993 patent,

at 4:33–45; SUMF ¶¶ 3–5, 9. The speech recognition elements of the abstract idea are

conventional. *See* SUMF ¶¶ 6–7, 9. The '993 patent concedes that "speech recognition systems

are conventionally broken up into . . . pronunciation dictionaries . . . and language models." '993

patent at 3:26–30; SUMF ¶ 6. The specification also describes the claimed computer elements as

generic and conventional. SUMF ¶¶ 3–5. There can be no factual dispute that the claim lacks an

inventive concept. *See Aatrix Software.,* 890 F.3d at 1356.   The claim here is little "more than a drafting effort designed to monopolize the [abstract idea]" as warned against in *Alice.* 573 U.S. at 221.

The claims here are similar to patent claims that courts have found to lack an inventive concept. For example, in *SAP*, the Federal Circuit invalidated claims applying an improved statistical analysis on investment information via a basic computer because they provided nothing inventive beyond the abstract idea behind the statistical analysis. 898 F.3d at 1168–69. In *BSG Tech*, the Federal Circuit found that claims that had been narrowed to a specific database were not patent eligible because the claimed databases were "well-understood and conventional" and the claims provided nothing inventive beyond the abstract idea. 899 F.3d at 1291. In *Electric Power Group*, the Court rejected the challenged claims because they "[did] not require any nonconventional computer, network, or display components, or even a non-conventional and non-generic arrangement of known, conventional pieces, but merely call[ed] for performance of the claimed information collection, analysis, and display functions on a set of generic computer components and display devices." 830 F.3d at 1355 (internal quotation marks and citation omitted).

Claim 1 is no different. There can be no dispute that it is a "quintessential do it on a computer" claim and discloses nothing more than the application of the abstract idea with conventional, well-understood, generic computer components. *See Univ. of Fla.*, 916 F.3d at 1367, 1369. This is not an inventive concept. In the situation here where the specification admits the additional claim elements are well-understood, routine, and conventional, there is no genuine dispute as to inventive concept. *Aatrix Software.*, 890 F.3d at 1356 (Moore, J., concurring from denial of petition for rehearing en banc). No further factual inquiry into

whether the claims encompass an inventive concept as in *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1370 (Fed. Cir. 2018) is necessary because (1) the claims here recite nothing beyond the abstract idea mental steps, which the patentee conceded during prosecution was non-statutory subject matter absent the amendment to include conventional computer components, and (2) the specification concedes the recited computer elements were conventional. See *Aatrix Software.*, 890 F.3d at 1356–57 (distinguishing *Berkheimer*'s disputed factual inquiry from cases where "[r]elying on the specification alone may be appropriate where, as in *Mayo*, the specification admits as much [(i.e. that the specification described the additional elements as well-known, routine and conventional)]" (emphasis in original)).

B. Independent Claims 9 and 17 also Claim Ineligible Subject Matter

Independent claims 9 and 17 do not substantively differ from claim 1. Independent claim 9 is simply claim 1 written in system form reciting a computer readable storage medium with stored instructions. *Compare* '993 patent, at 12:13–26 *with id.* at 12:53–13:3. Similarly, independent claim 17 is simply claim 1 written in device form reciting a computer-readable storage device. *Compare* '993 patent, at 12:13–26 *with id.* at 14:3–17. As a result, Claims 9 and 17 of the '993 patent are also invalid for failure to claim patent-eligible subject matter under 35 U.S.C. § 101 for the same reasons as claim 1.

As with claim 1, claims 9 and 17 are directed to the same abstract idea of creating and using a language model with pronunciation probabilities. *See Alice*, 573 U.S. at 226–27 (finding ineligibility of system claims in light of ineligible method claims where "the system claims are no different from the method claims in substance").

The specification further admits that the storage medium of claims 9 and 17 may be any conventional memory "that stores information and instructions for execution by processor" and "may include any type of media." *Id.* at 4:35–45. Consequently, "none of the hardware recited

by the system claims offers a meaningful limitation beyond generally linking the use of the

[method] to a particular technological environment, that is, implementation via computers." *See*

Alice, 573 U.S. at 226 (internal quotation marks and citation omitted). The addition of a generic

computer system to an otherwise non-patentable claim is not sufficient to confer patent-

eligibility. *Id.* at 226–27. Therefore, claims 9 and 17 of the '993 patent are invalid under § 101.

C. The Dependent Claims Are Also Drawn to Patent-Ineligible Subject Matter

Dependent claims 2–8, 10–16, and 18–20 of the '993 patent are also invalid for failure to

claim patent-eligible subject matter under 35 U.S.C. § 101.

As with the independent claims, and for the same reasons, the dependent claims are also

directed to an abstract idea of creating and using a language model with pronunciation

probabilities. The dependent claims merely provide additional abstract concepts concerning the

attributes of or the relationships in the language model or mental steps as to how to implement

the algorithm itself, and do not otherwise meaningfully limit the claims. *See* '993 patent, at

12:27–14:29. The dependent claims provide additional limitations on:

(1)   the creation of the language model, including the steps of "removing the pronunciation probabilities from a pronunciation dictionary," (claims 2, 10, 18), or using "pronunciation dependencies across word boundaries," (claims 3, 11, 19), or creating and using a "wide context pronunciation model" (claims 6, 14). *See id.*

(2)   the utterance to be recognized, as in claim 4, which specifies that "one of contextual dependencies and consistency in pronunciation style exist throughout the utterance," (claims 4, 12, 20). *See id.*

(3)   the pronunciation probabilities contained in the language model, including that the pronunciation probabilities are "pronunciation dependent word pairs as lexical items," (claims 5, 13), "a set of most frequent words each with more than one pronunciation" (claims 7, 15) and that "more than one pronunciation alternative is in the language model," (claims 8 and 16). *See id.*

Adding abstract algorithmic steps on top of the abstract idea of claim 1 cannot alter the

conclusion that the claims are directed to the abstract idea of creating and using a language

model with pronunciation probabilities. *SAP*, 898 F.3d at 1168–69 (dependent claims that further narrow by adding types of mathematical operations do nothing to change the abstract nature of a claim). These additional limitations do not "sufficiently describe how to achieve these results in a non-abstract way" and thus do not change the abstract nature of the claim. *See Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1337 (Fed. Cir. 2017).

This is further confirmed by the prosecution history. During prosecution, claims 2 through 8 were rejected under 35 U.S.C. § 101 because "none of their corresponding steps explicitly or inherently require the use of a particular machine." Sternberg Decl. Ex. D at NUANCE0000000056; SUMF ¶ 10. These claims are substantially the same as claims 10 through 16, and 18 through 20. *Compare* '993 Patent, at 12:27–52 *with id.* at 13:4–14:2 *and id.* at 14:19–29. Therefore, the dependent claims are again directed to the abstract idea of creating and using a language model with pronunciation probabilities under step one of *Alice*.

The dependent claims also do not disclose an inventive concept sufficient to confer patent eligibility under step two of *Alice*. The claims only discuss performing additional mental steps in general terms and do not specify *how* to achieve the claimed results. Based on the claim language, as with claim 1, these steps may be performed by any generic processor, or by a human with pencil and paper. The claims do not require "anything other than conventional computer and network components operating according to their ordinary functions." *See Two-Way Media Ltd.*, 874 F.3d at 1339. This is not sufficient under step two of *Alice*.

V.   CONCLUSION

The asserted claims are invalid as directed to non-patentable subject matter because the claims are directed to an abstract idea and fail to include limitations that would provide an inventive concept. Omilia requests that this Court grant summary judgment that the claims of the '993 patent are invalid as patent-ineligible subject matter under 35 U.S.C. § 101.

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Respectfully Submitted,

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CERTIFICATE OF SERVICE

I hereby certify that counsel of record who are deemed to have consented to electronic service are being served on July 2, 2020 with a copy of this document via the Court's CM/ECF system per Local Rule CV-5.4 (c).

/s/ *Daniel S. Sternberg*
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